



TEST DATA

Test Data Number: 3150809MIN-001

Project Number: 3150809

Testing performed on the
InterReach Fusion Wideband

To
47 CFR, Part 22:2007

For
ADC Telecommunications Inc.

Test Performed by:
Intertek Testing Services NA, Inc.
7250 Hudson Blvd., Suite 100
Oakdale, MN 55128

Test Authorized by:
ADC Telecommunications Inc.
5341 12th Avenue East
Shakopee, MN 55379

Prepared by: 
Norman Shpilsher

Date: May 16, 2008

Reviewed by: 
Uri Spector

Date: May 16, 2008



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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	InterReach Fusion Wideband System, which consists of: - FSN-W2-808519-1, Remote Access Unit (RAU) - Main Hub - Expansion Hub
Type of EUT:	Indoor Fiber / Coaxial Repeater
Serial Number:	N/A
Company:	ADC Telecommunications Inc.
Customer:	Mr. Mark Miska
Address:	1187 Park Place Shakopee, MN 55379
Phone:	952-403-8340
Fax:	952-403-8858
Test Standards:	☐ EN 55022:2006, Class A ☐ EN 55011:1998 + A1:1999 + A2:2002, Group ☐ , Class ☐ ☐ 47 CFR, Part 15:2007, §15.107 and §15.109, Class A ☒ 47 CFR, Part 22:2007 ☐ 47 CFR, Part 24:2007 ☐ 47 CFR, Part 90:2007 ☐ EN 55014-1:2000 + A1:2001 + A2:2002 ☐ EN 61326-1:2006 ☐ Class ☐ for Radiated and Conducted Emissions ☐ EN 60601-1-2:2001 +A1:2006 ☐ Class ☐ Radiated and Conducted Emissions ☐ EN 61000-6-3:2007 ☐ EN 61000-6-4:2007 ☐ EN 61000-3-2:2006 ☐ EN 61000-3-3:1995 +A1:2001 +A2:2006 ☐ Other ☐

2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 22	Spurious Enclosure Radiated Emissions	Pass

2.1 Statement of the Measurement Uncertainty

Note: The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty ($k = 2$) for radiated emissions from 30 to 1000 MHz has been determined to be: ± 4 dB at 10m and ± 5.4 dB at 3m

The expanded uncertainty ($k = 2$) for conducted emissions from 150 kHz to 30 MHz has been determined to be:
 ± 2.6 dB

General notes:

1. Test was performed with the System in Tx mode tuned to the low frequency (869MHz), middle frequency (881.5MHz), and upper frequency (894MHz) of the operating band.
In Rx mode the System was tuned to the low frequency of 824MHz, middle frequency of 836.5MHz, and upper frequency of 849MHz of the operating band.
Testing was performed in frequency range from 30MHz to 10GHz.
2. In Tx mode the DL3 Port of the Main Hub was connected to the Signal Generator, and all other RF ports of the System were terminated with 50Ohm terminator.
In Rx mode the Cellular Port of the RAU was connected to the Signal Generator, and all other RF ports of the System were terminated with 50Ohm terminator.
The Signal Generator was located outside of the test site.
3. The Spurious Radiated Power limits of -13dBm was correlated with field strength reference level of 82.2dB μ V/m during field strength measurements at 3m measurement distance.

3.0 TEST RESULTS

3.1 Spurious Radiated Emissions, Tx Mode

No emissions were chosen for substitution measurements as the maximum emissions is more than 20dB below the reference limit

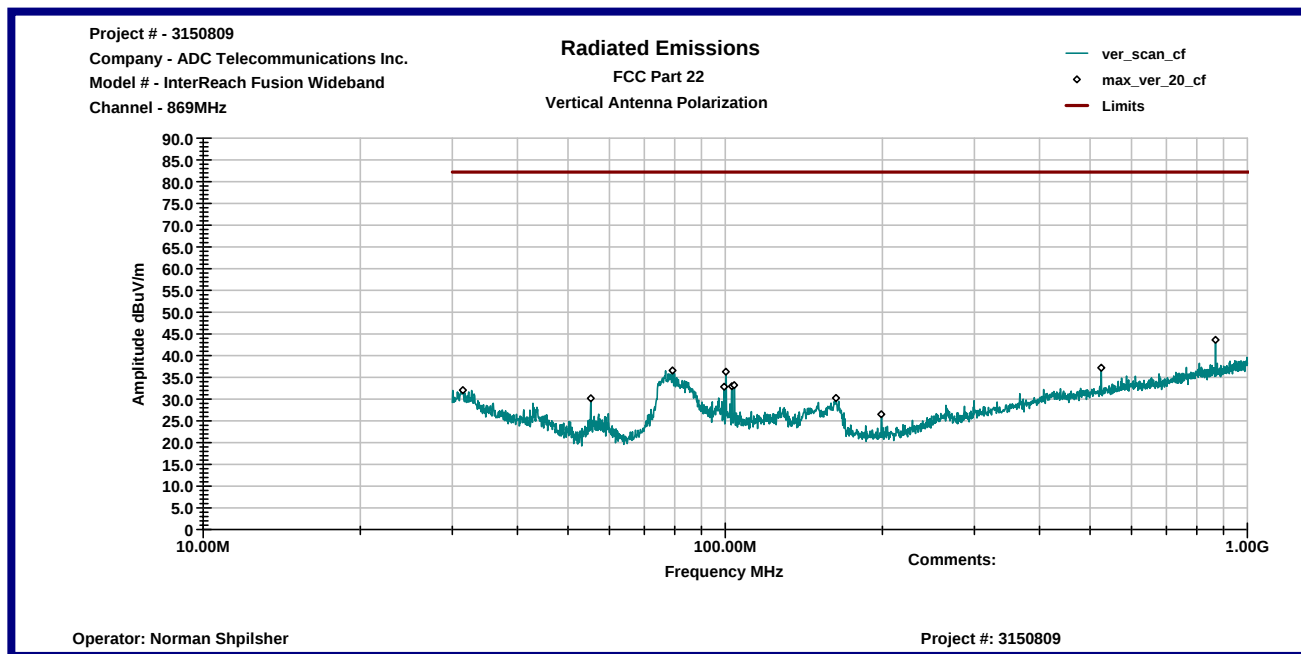
Radiated Emissions from 30MHz to 1GHz

Date: 05-08-2008

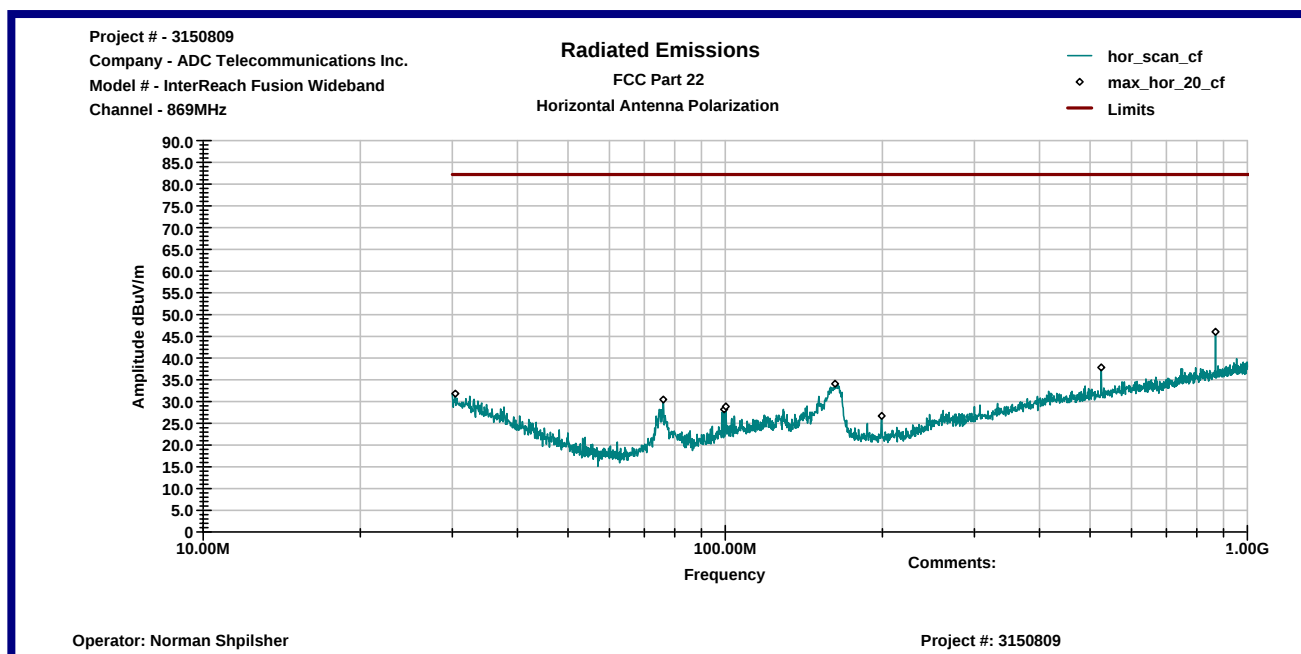
Company: ADC Telecommunications Inc.
Model: InterReach Fusion Wideband
Test Engineer: Norman Shpilsher
Special Info: Tx Mode
Standard: FCC Part 22
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 1

Frequency	Ant. Polarity	Peak Reading dBμV	Ant.Factor dB1/m	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
869MHz Channel						
79.258 MHz	V	27.7	8.9	36.6	82.2	-45.6
525.11 MHz	V	16.7	20.5	37.2	82.2	-45.0
869.14 MHz	V	19.3	24.3	43.6	82.2	-38.6
162.4 MHz	H	22.1	12.0	34.1	82.2	-48.1
525.11 MHz	H	17.3	20.5	37.9	82.2	-44.4
869.14 MHz	H	21.8	24.3	46.0	82.2	-36.2
881.5MHz Channel						
77.168 MHz	V	27.8	8.7	36.5	82.2	-45.8
100.3 MHz	V	23.4	11.9	35.3	82.2	-47.0
881.87 MHz	V	23.3	24.4	47.7	82.2	-34.5
163.04 MHz	H	21.6	11.9	33.6	82.2	-48.7
511.95 MHz	H	17.5	20.3	37.8	82.2	-44.4
881.87 MHz	H	28.0	24.4	52.4	82.2	-29.8
894MHz Channel						
30.693 MHz	V	12.2	20.2	32.3	82.2	-49.9
76.571 MHz	V	27.6	8.6	36.2	82.2	-46.0
893.9 MHz	V	24.7	24.6	49.3	82.2	-32.9
30.831 MHz	H	11.7	20.1	31.9	82.2	-50.4
161.75 MHz	H	22.9	12.0	34.9	82.2	-47.3
893.9 MHz	H	26.6	24.6	51.2	82.2	-31.0



Graph 1



Graph 2

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

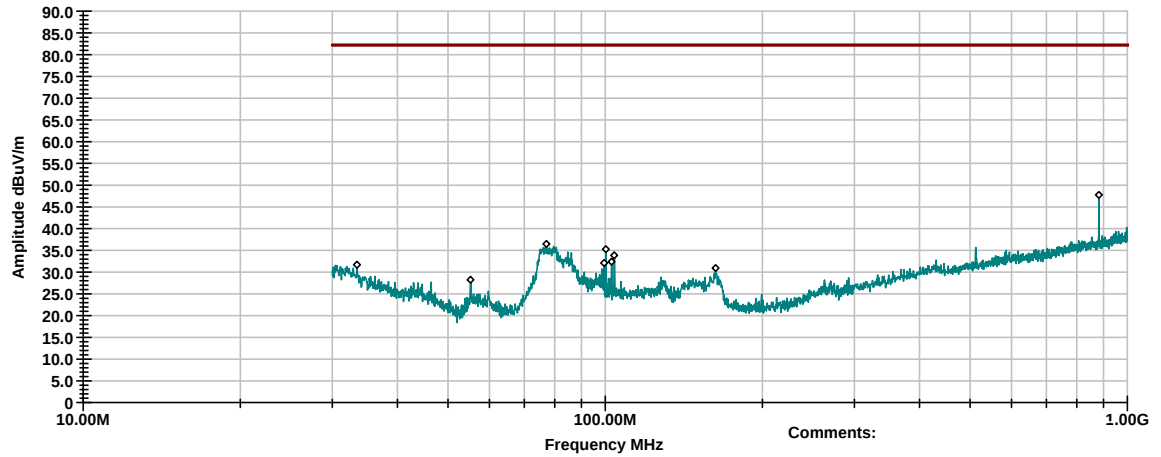
Channel - 881.5MHz

Radiated Emissions

FCC Part 22

Vertical Antenna Polarization

ver_scan_cf
max_ver_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 3

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

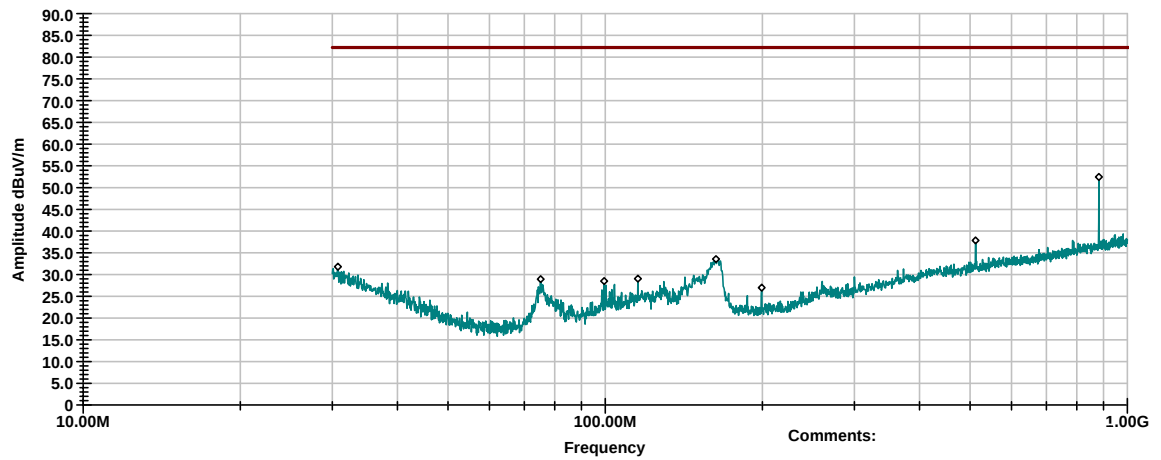
Channel - 881.5MHz

Radiated Emissions

FCC Part 22

Horizontal Antenna Polarization

hor_scan_cf
max_hor_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 4

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

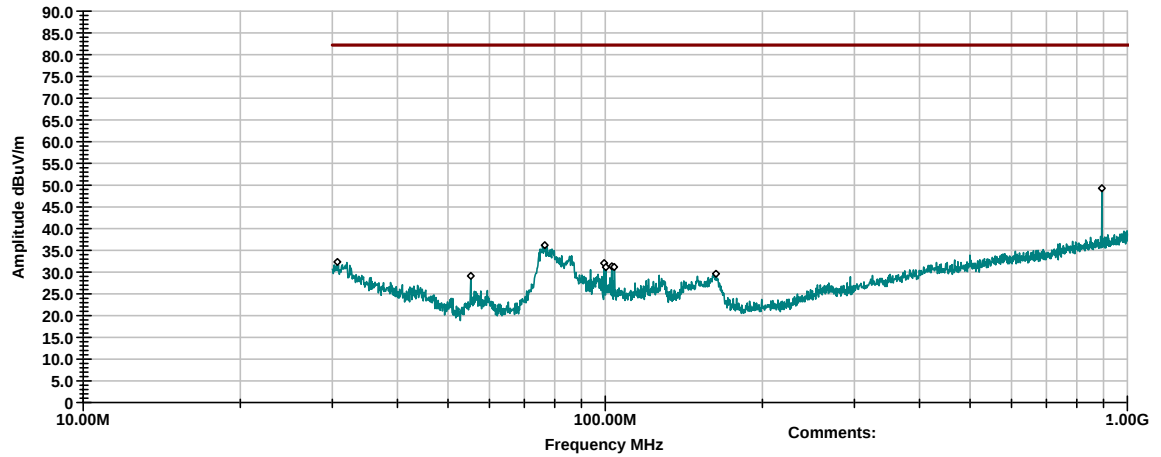
Channel - 894MHz

Radiated Emissions

FCC Part 22

Vertical Antenna Polarization

ver_scan_cf
max_ver_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 5

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

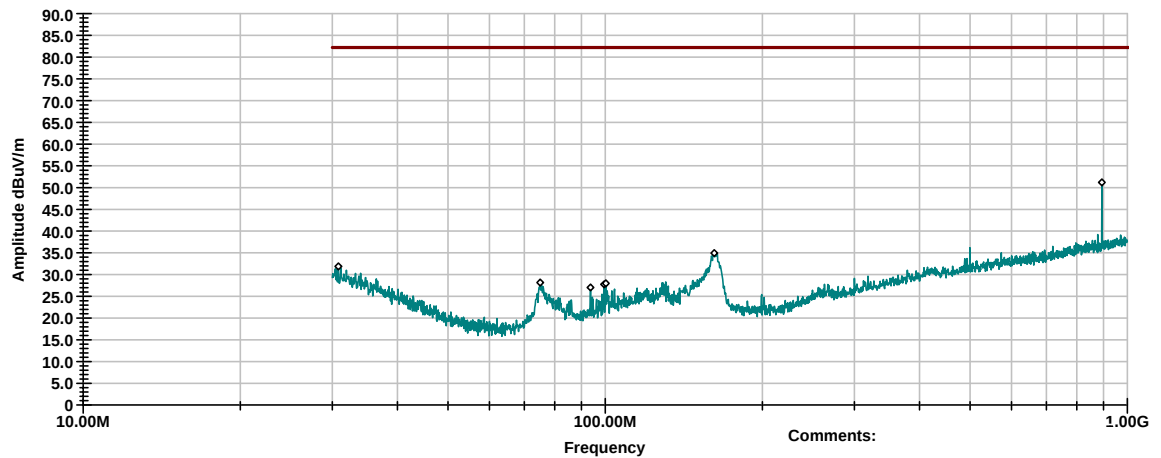
Channel - 894MHz

Radiated Emissions

FCC Part 22

Horizontal Antenna Polarization

hor_scan_cf
max_hor_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 6

Radiated Emissions from 1 to 10GHz
Date: 05-08-2008

Company: ADC Telecommunications Inc.
Model: InterReach Fusion Wideband
Test Engineer: Norman Shpilsher
Special Info: Tx Mode
Standard: FCC Part 22
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 2

Frequency MHz	Antenna Polarity	Reading dBμV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
869MHz Channel							
1.792 GHz	V	61.9	30.4	38.9	53.4	82.2	-28.8
7.1704 GHz	V	37.1	43.5	37.0	43.6	82.2	-38.6
9.7588 GHz	V	36.2	46.6	34.8	48.0	82.2	-34.2
1.792 GHz	H	65.3	30.4	38.9	56.7	82.2	-25.5
5.3776 GHz	H	38.0	40.8	37.4	41.5	82.2	-40.7
9.7588 GHz	H	35.2	46.6	34.8	47.1	82.2	-35.1
881.5MHz Channel							
1.792 GHz	V	64.1	30.4	38.9	55.6	82.2	-26.6
7.1704 GHz	V	37.5	43.5	37.0	44.1	82.2	-38.2
9.7588 GHz	V	35.7	46.6	34.8	47.6	82.2	-34.6
1.792 GHz	H	65.6	30.4	38.9	57.0	82.2	-25.2
5.3776 GHz	H	39.1	40.8	37.4	42.6	82.2	-39.6
9.7588 GHz	H	33.5	46.6	34.8	45.3	82.2	-36.9
894MHz Channel							
1.792 GHz	V	64.3	30.4	38.9	55.7	82.2	-26.5
7.1704 GHz	V	37.3	43.5	37.0	43.8	82.2	-38.4
9.7588 GHz	V	35.6	46.6	34.8	47.4	82.2	-34.8
1.792 GHz	H	65.5	30.4	38.9	57.0	82.2	-25.3
3.214 GHz	H	44.8	34.6	37.8	41.5	82.2	-40.7
5.3776 GHz	H	38.4	40.8	37.4	41.9	82.2	-40.3
6.4288 GHz	H	36.1	42.3	36.3	42.0	82.2	-40.2
9.7588 GHz	H	35.5	46.6	34.8	47.3	82.2	-34.9

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

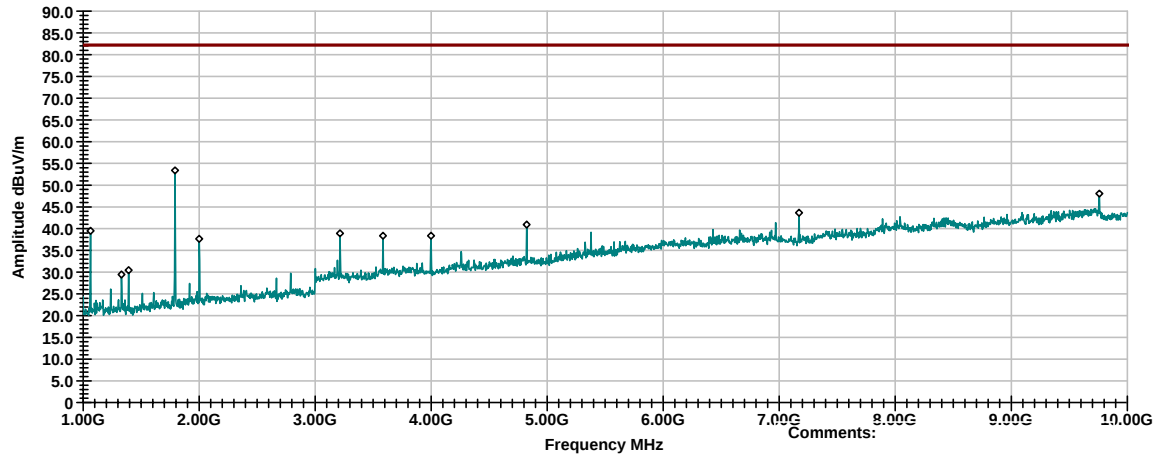
Channel - 869MHz

Radiated Emissions

FCC Part 22

Vertical Antenna Polarization

ver_scan_cf
max_ver_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 7

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

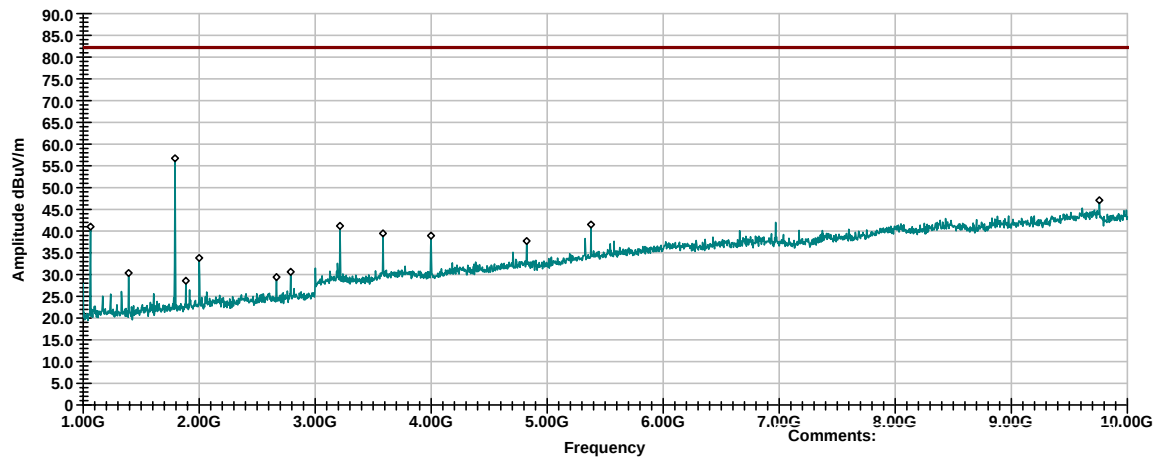
Channel - 869MHz

Radiated Emissions

FCC Part 22

Horizontal Antenna Polarization

hor_scan_cf
max_hor_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 9

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

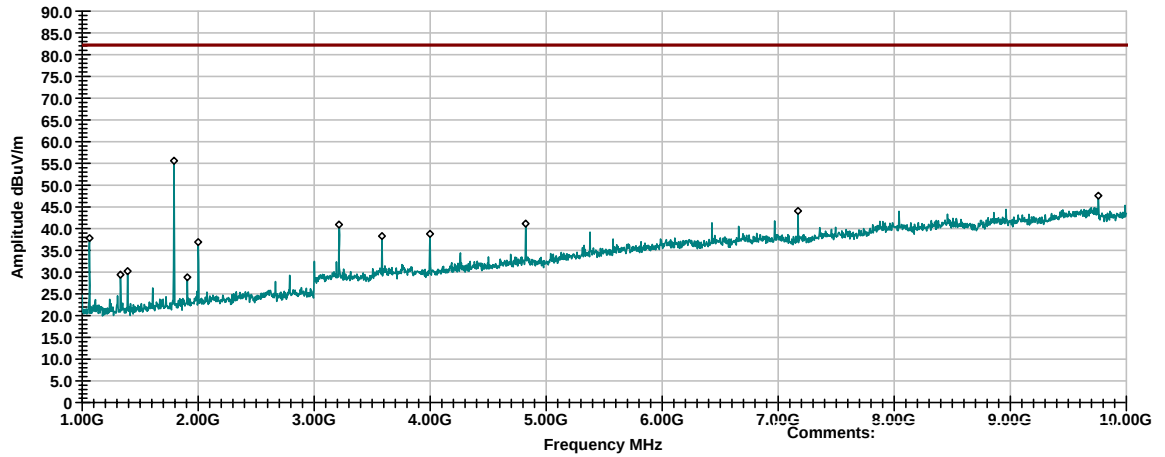
Channel - 881.5MHz

Radiated Emissions

FCC Part 22

Vertical Antenna Polarization

ver_scan_cf
max_ver_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 9

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

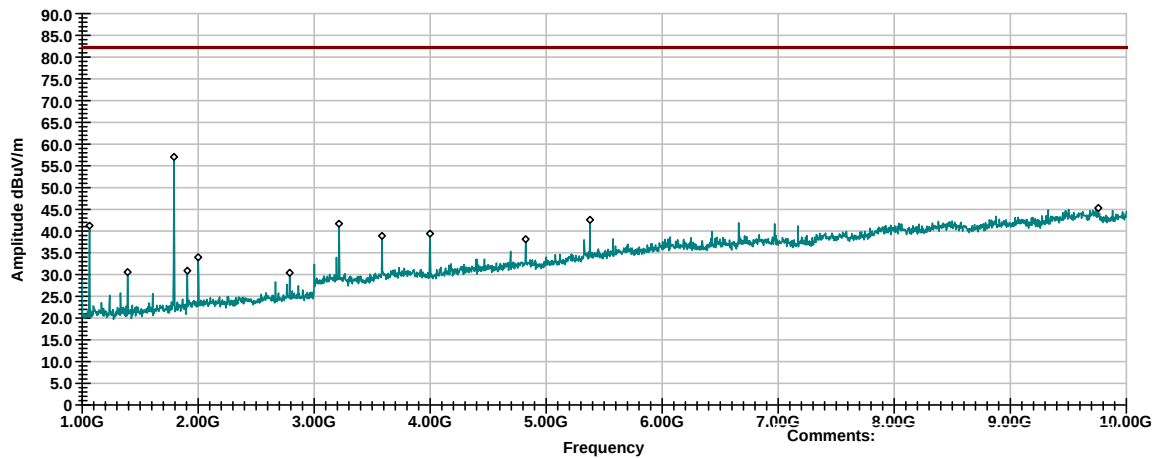
Channel - 881.5MHz

Radiated Emissions

FCC Part 22

Horizontal Antenna Polarization

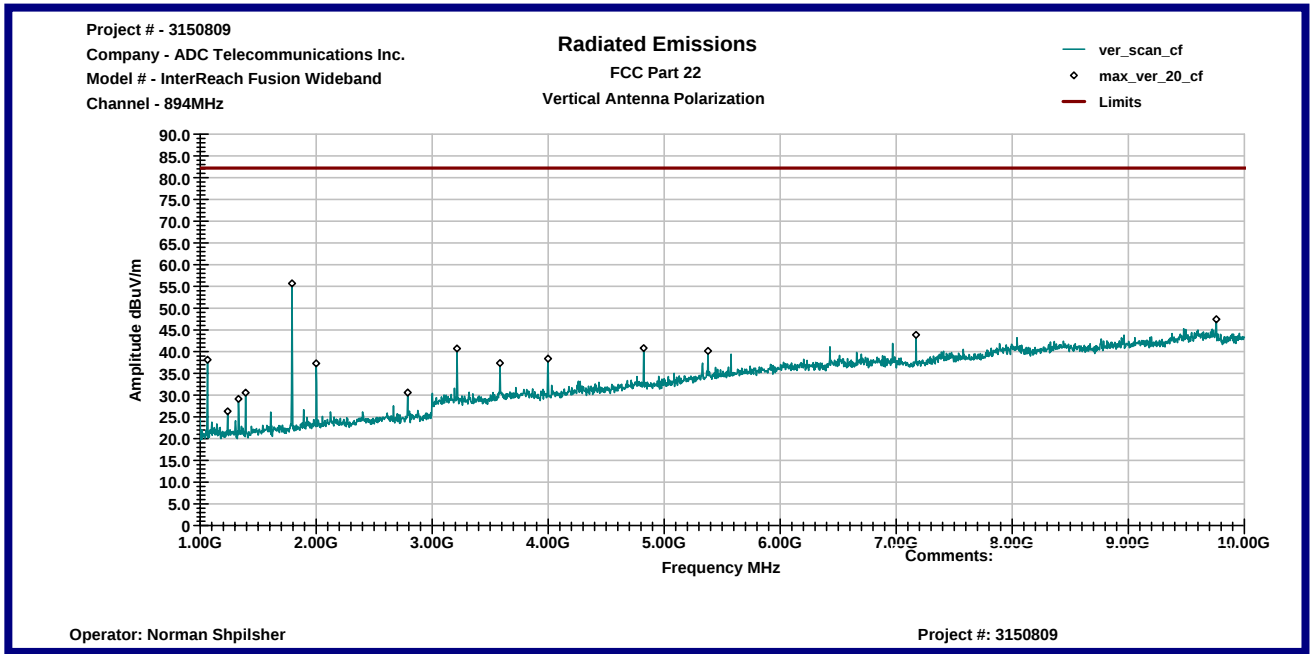
hor_scan_cf
max_hor_20_cf
Limits



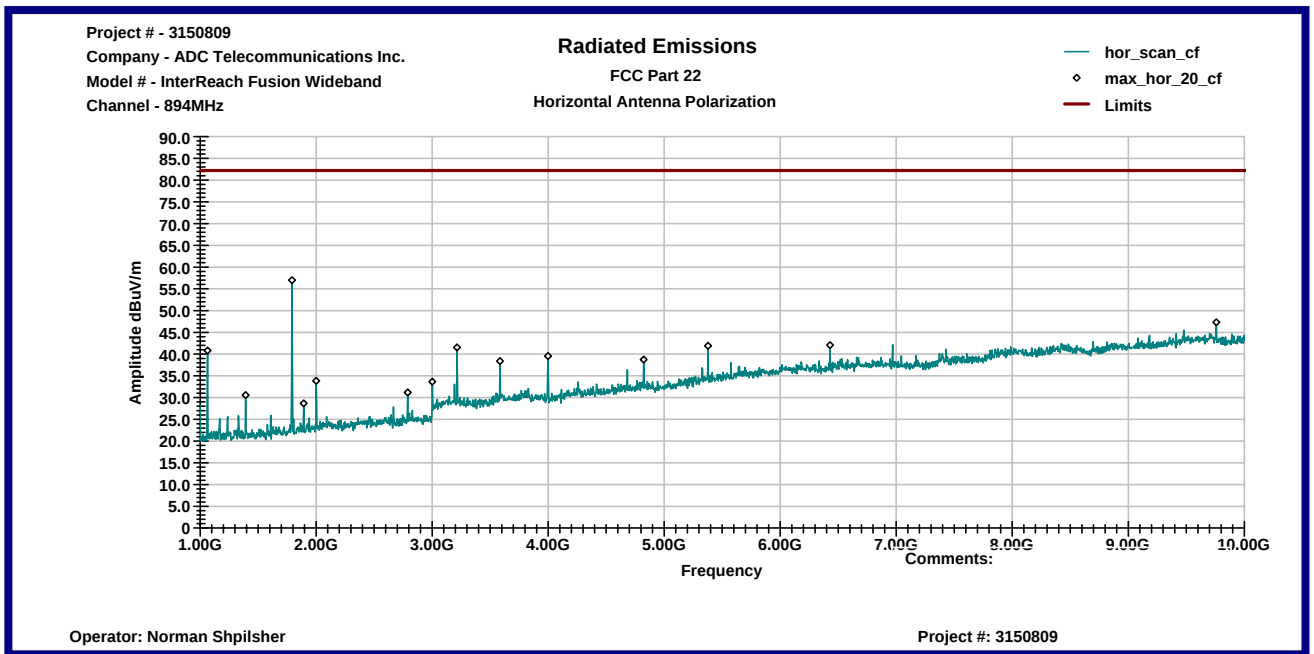
Operator: Norman Shpilsher

Project #: 3150809

Graph 10



Graph 11



Graph 12

3.2 Spurious Radiated Emissions, Rx Mode

No emissions were chosen for substitution measurements as the maximum emissions is more than 20dB below the reference limit

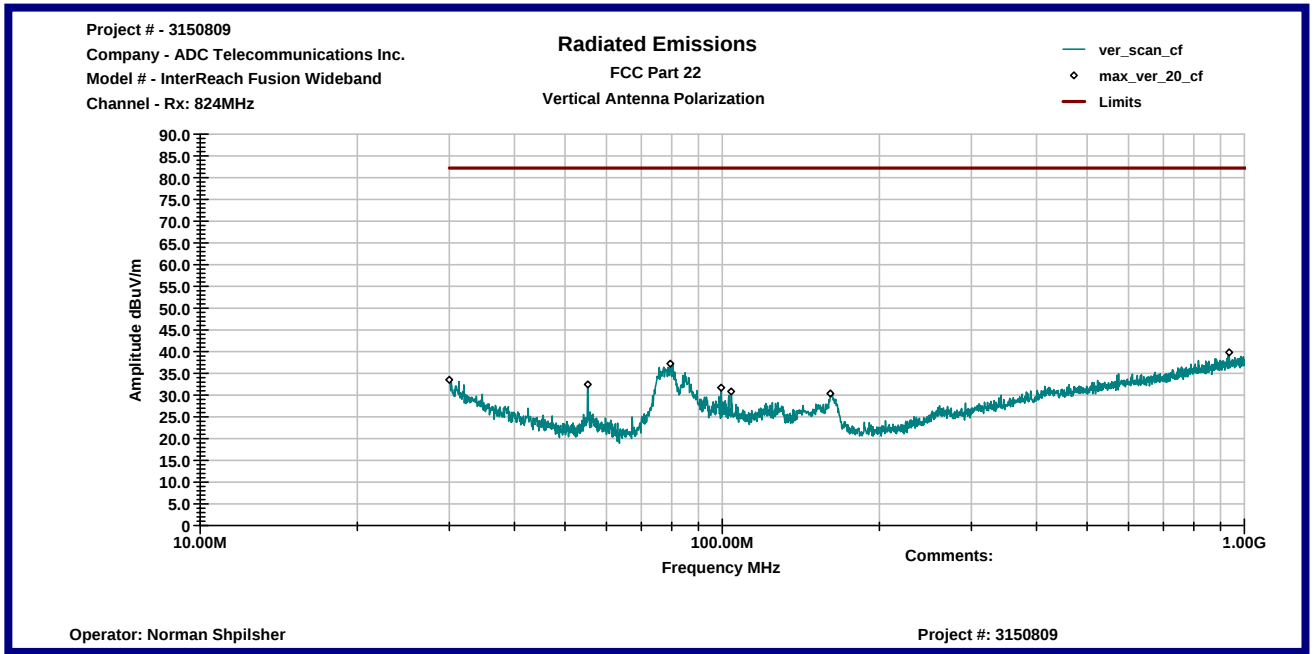
Radiated Emissions from 30MHz to 1GHz

Date: 05-08-2008

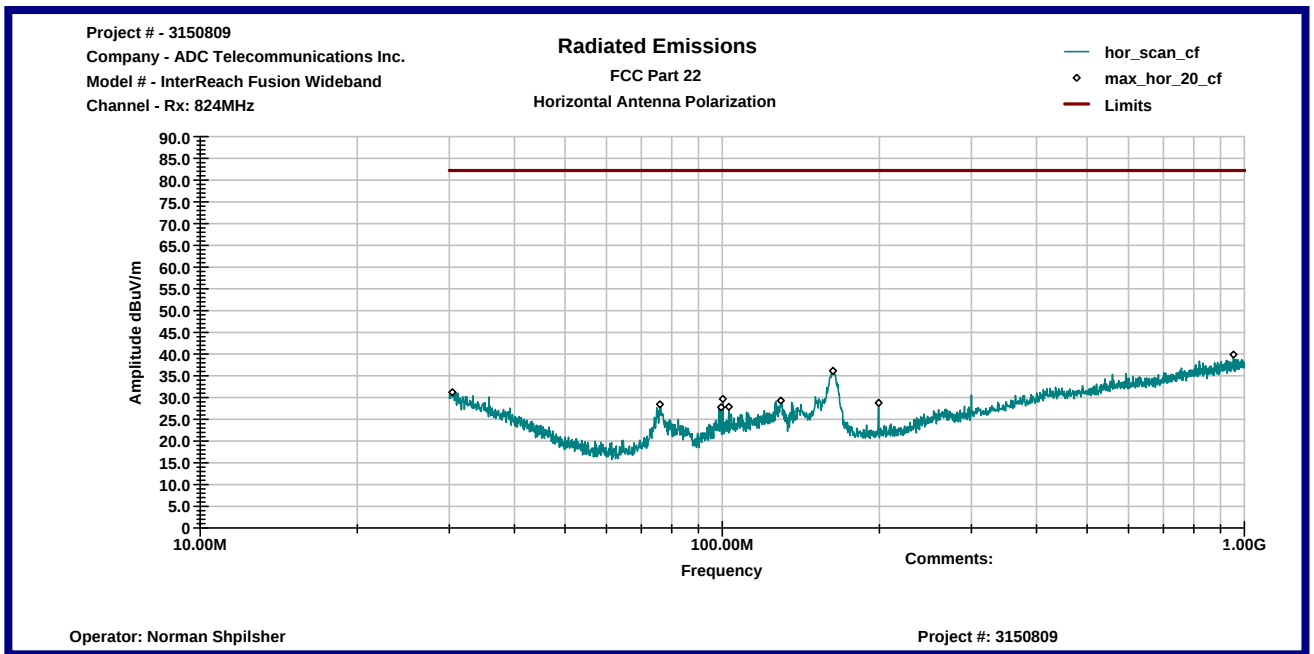
Company: ADC Telecommunications Inc.
Model: InterReach Fusion Wideband
Test Engineer: Norman Shpilsher
Special Info: Rx Mode
Standard: FCC Part 22
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 3

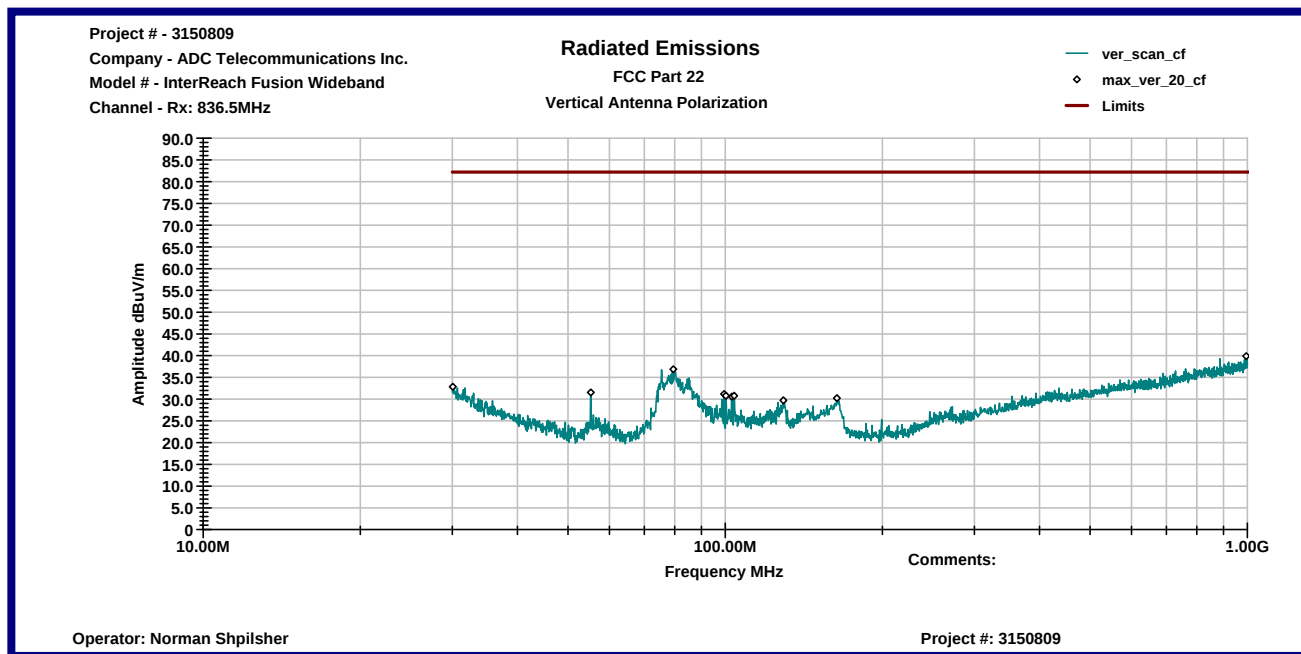
Frequency	Ant. Polarity	Peak Reading dBμV	Ant.Factor dB1/m	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
824MHz Channel						
30.0 MHz	V	13.0	20.5	33.5	82.2	-48.7
79.556 MHz	V	28.3	8.9	37.2	82.2	-45.0
935.63 MHz	V	14.7	25.1	39.8	82.2	-42.4
30.416 MHz	H	10.9	20.3	31.2	82.2	-51.0
163.04 MHz	H	24.2	11.9	36.1	82.2	-46.1
953.32 MHz	H	14.5	25.4	39.9	82.2	-42.3
836.5MHz Channel						
30.069 MHz	V	12.3	20.5	32.8	82.2	-49.4
79.556 MHz	V	27.9	8.9	36.8	82.2	-45.4
995.05 MHz	V	14.0	25.9	39.9	82.2	-42.3
31.316 MHz	H	11.2	19.8	31.0	82.2	-51.2
161.11 MHz	H	23.0	12.0	35.1	82.2	-47.2
977.37 MHz	H	13.9	25.7	39.6	82.2	-42.6
849MHz Channel						
79.258 MHz	V	28.3	8.9	37.2	82.2	-45.0
100.3 MHz	V	20.0	11.9	31.8	82.2	-50.4
999.29 MHz	V	13.9	26.0	39.8	82.2	-42.4
30.139 MHz	H	11.5	20.5	31.9	82.2	-50.3
164.97 MHz	H	23.3	11.8	35.1	82.2	-47.1
915.83 MHz	H	14.2	24.9	39.1	82.2	-43.1



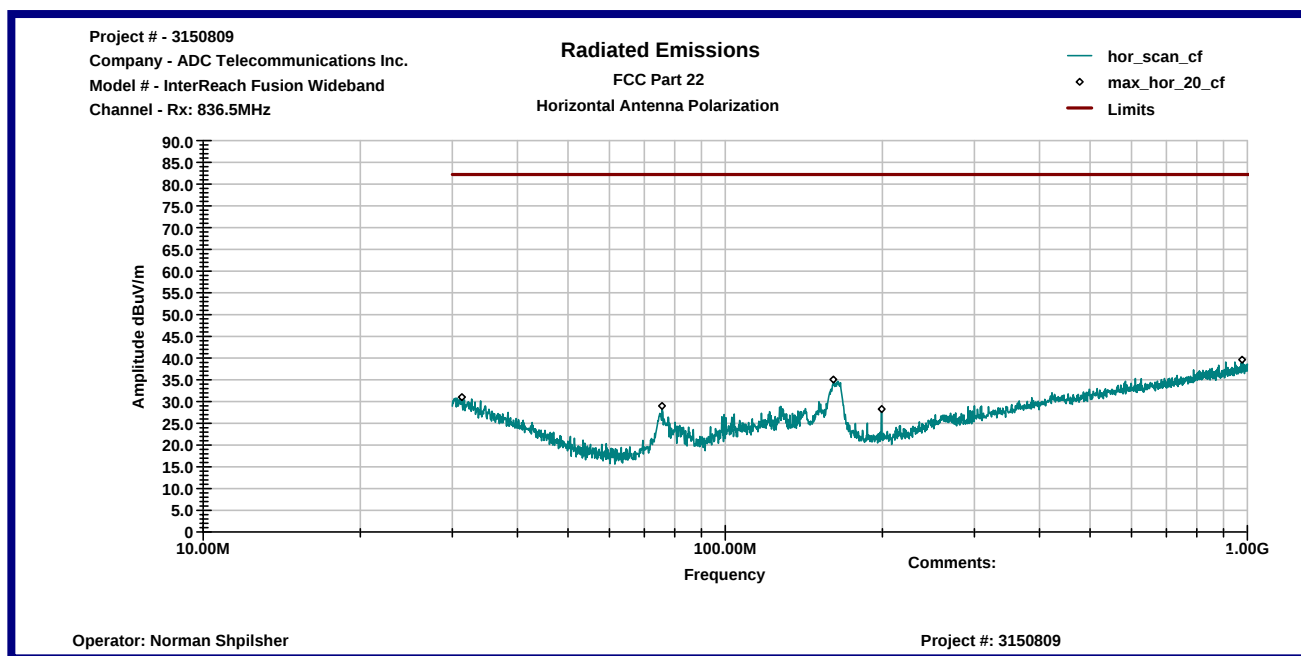
Graph 13



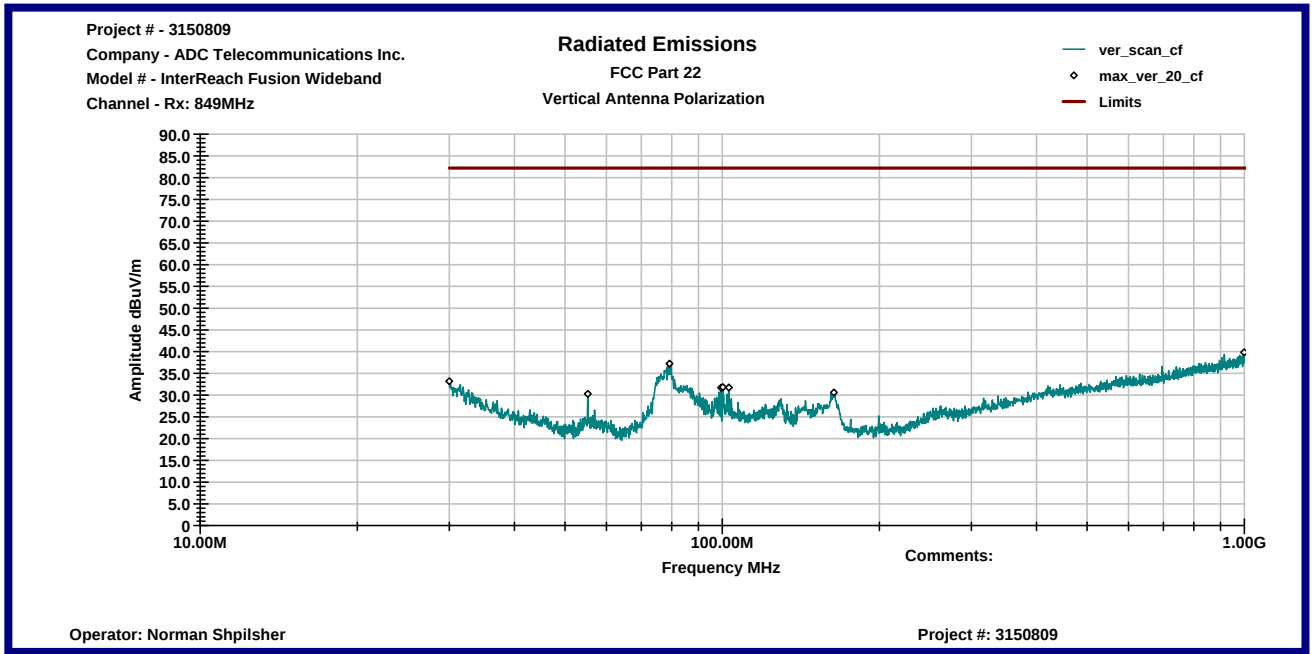
Graph 14



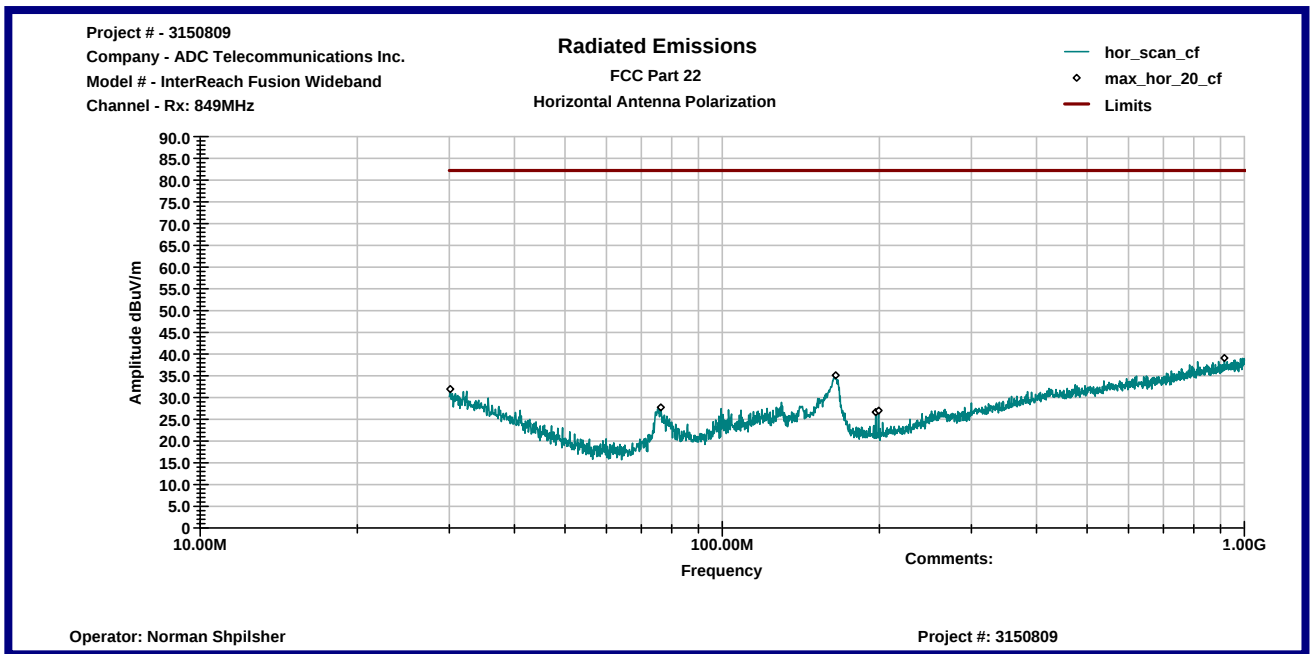
Graph 15



Graph 16



Graph 17



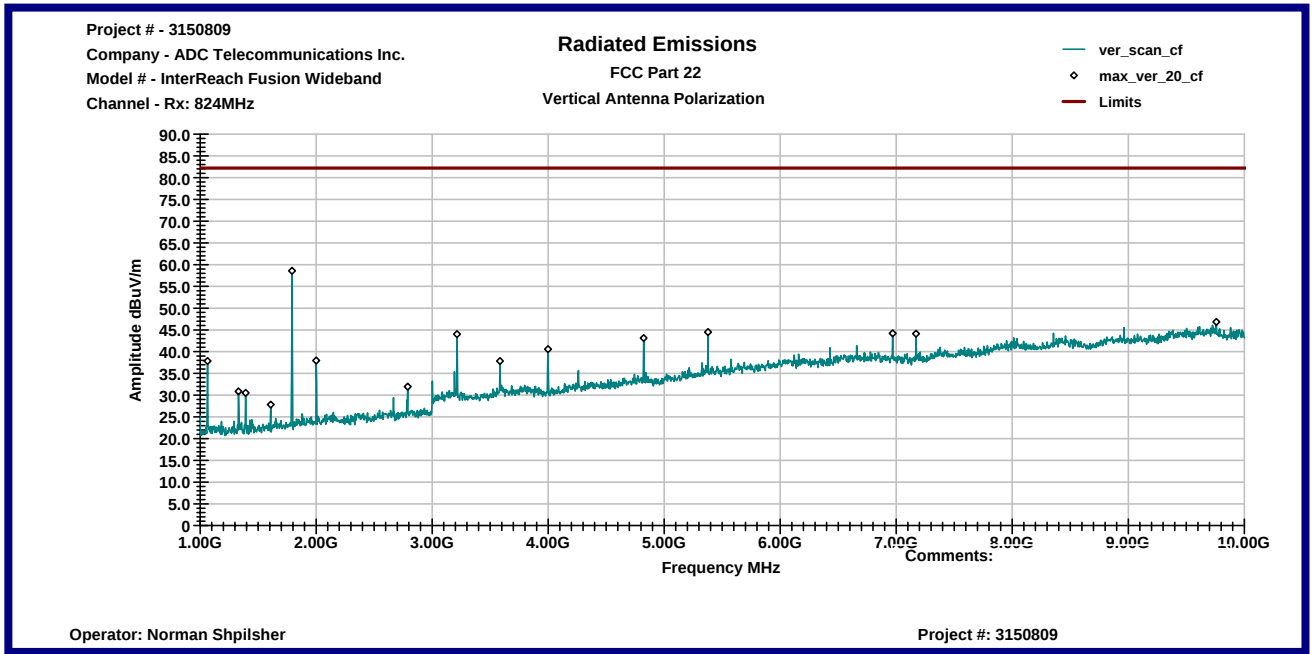
Graph 18

Radiated Emissions from 1 to 10GHz
Date: 05-08-2008

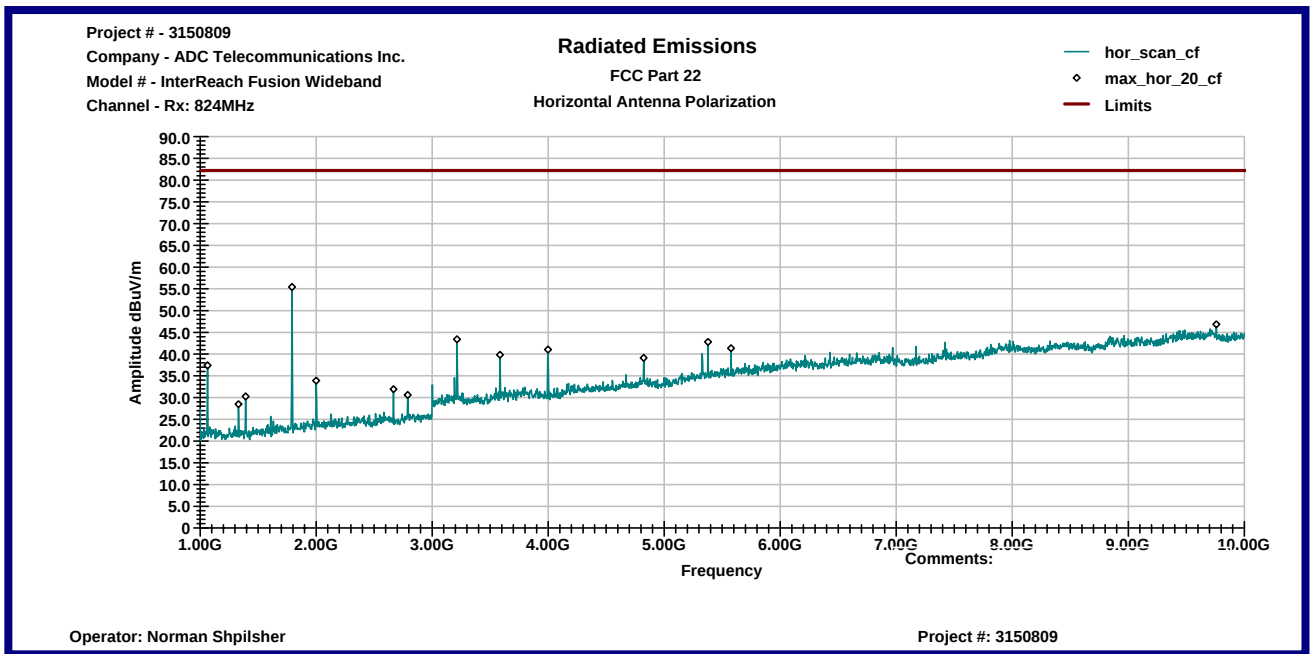
Company: ADC Telecommunications Inc.
Model: InterReach Fusion Wideband
Test Engineer: Norman Shpilsher
Special Info: Rx Mode
Standard: FCC Part 22
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

Table # 4

Frequency MHz	Antenna Polarity	Reading dBμV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBμV/m	Limit dBμV/m	Margin dB
824MHz Channel							
1.792 GHz	V	67.1	30.4	38.9	58.6	82.2	-23.6
5.3776 GHz	V	41.0	40.8	37.4	44.5	82.2	-37.7
9.7588 GHz	V	35.0	46.6	34.8	46.8	82.2	-35.4
1.792 GHz	H	64.0	30.4	38.9	55.4	82.2	-26.8
3.214 GHz	H	46.6	34.6	37.8	43.4	82.2	-38.8
9.7588 GHz	H	35.0	46.6	34.8	46.8	82.2	-35.4
836.5MHz Channel							
1.792 GHz	V	66.8	30.4	38.9	58.2	82.2	-24.0
7.1704 GHz	V	37.2	43.5	37.0	43.7	82.2	-38.5
9.7588 GHz	V	35.9	46.6	34.8	47.8	82.2	-34.4
1.792 GHz	H	63.8	30.4	38.9	55.3	82.2	-27.0
5.3776 GHz	H	41.8	40.8	37.4	45.3	82.2	-36.9
9.7588 GHz	H	34.2	46.6	34.8	46.1	82.2	-36.2
849MHz Channel							
1.792 GHz	V	66.3	30.4	38.9	57.7	82.2	-24.5
6.9688 GHz	V	39.5	43.1	37.1	45.4	82.2	-36.8
9.7588 GHz	V	35.9	46.6	34.8	47.7	82.2	-34.5
1.792 GHz	H	65.0	30.4	38.9	56.5	82.2	-25.8
3.214 GHz	H	45.9	34.6	37.8	42.6	82.2	-39.6
5.3776 GHz	H	40.5	40.8	37.4	43.9	82.2	-38.3
6.9688 GHz	H	37.6	43.1	37.1	43.6	82.2	-38.6
9.7588 GHz	H	35.7	46.6	34.8	47.5	82.2	-34.7



Graph 19



Graph 20

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

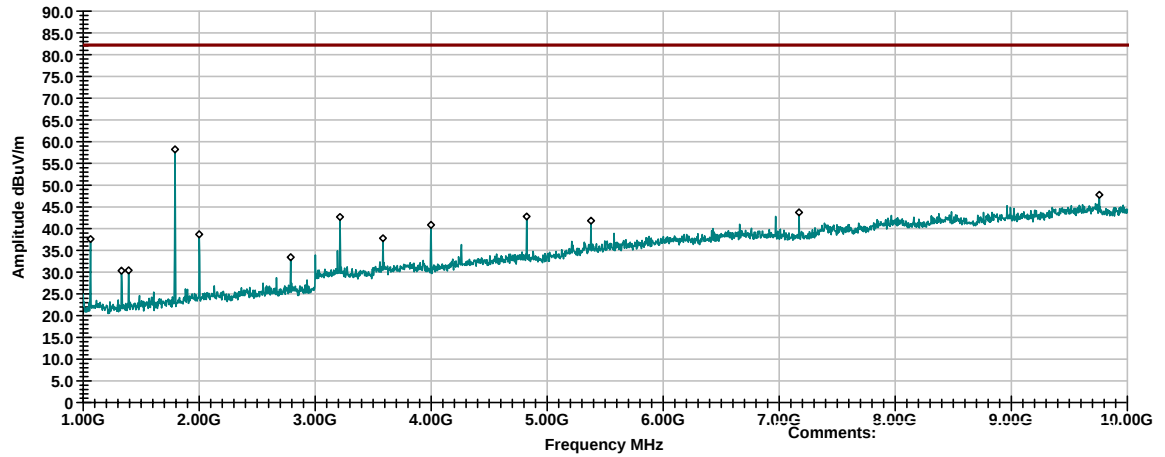
Channel - Rx: 836.5MHz

Radiated Emissions

FCC Part 22

Vertical Antenna Polarization

ver_scan_cf
max_ver_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 21

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

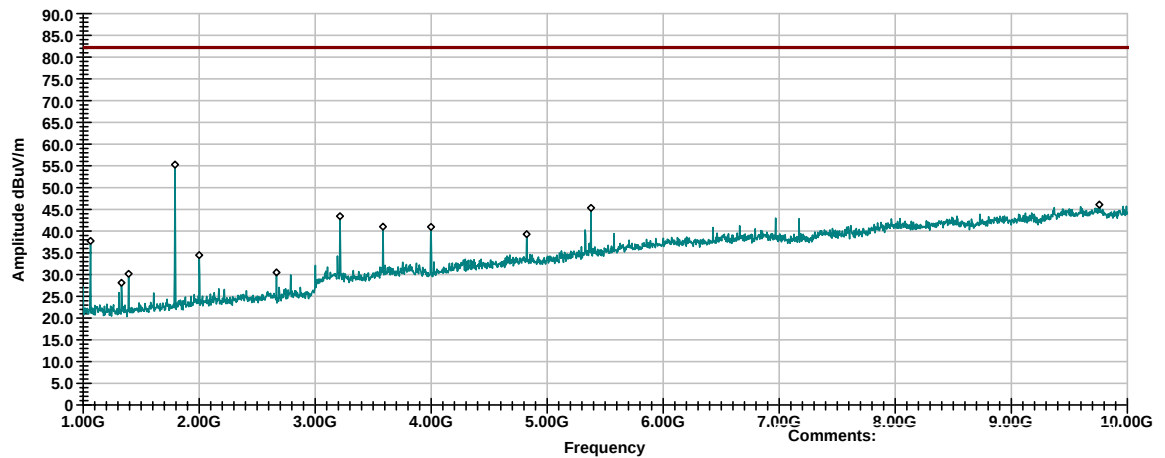
Channel - Rx: 836.5MHz

Radiated Emissions

FCC Part 22

Horizontal Antenna Polarization

hor_scan_cf
max_hor_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 22

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

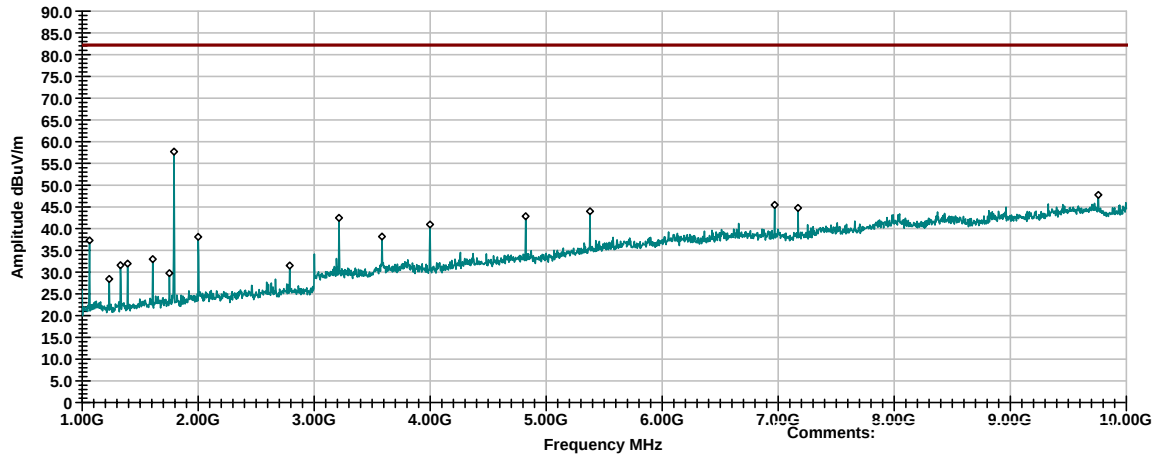
Channel - Rx: 849MHz

Radiated Emissions

FCC Part 22

Vertical Antenna Polarization

ver_scan_cf
max_ver_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 23

Project # - 3150809

Company - ADC Telecommunications Inc.

Model # - InterReach Fusion Wideband

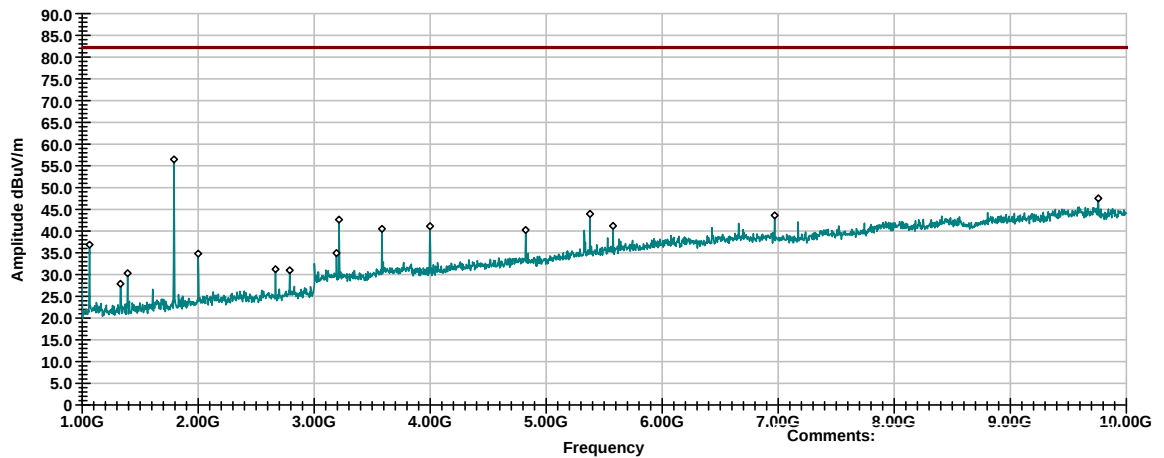
Channel - Rx: 849MHz

Radiated Emissions

FCC Part 22

Horizontal Antenna Polarization

hor_scan_cf
max_hor_20_cf
Limits



Operator: Norman Shpilsher

Project #: 3150809

Graph 24

3.3 Environmental conditions

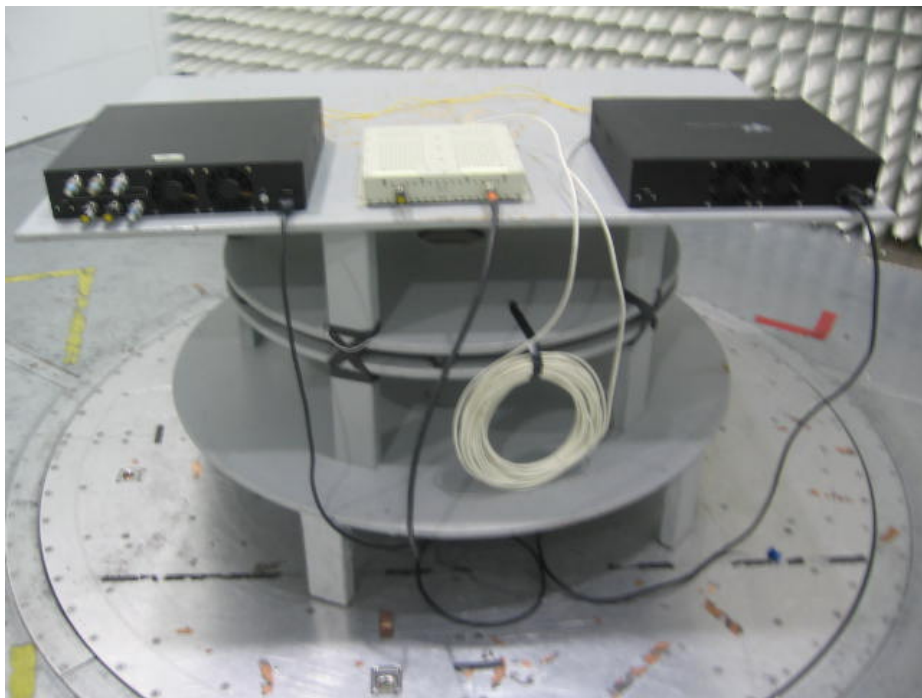
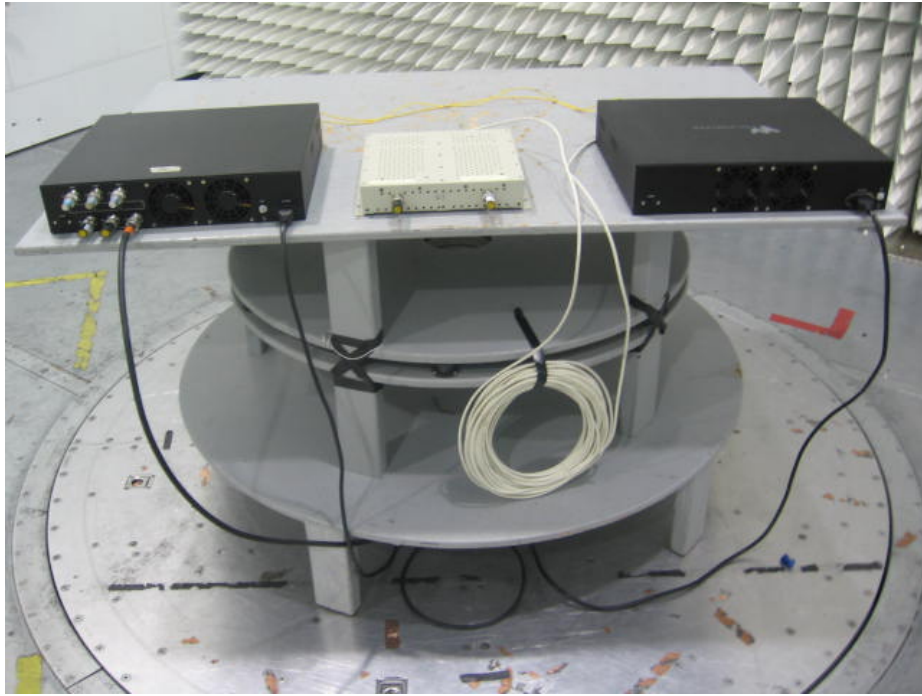
During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.0 PHOTOS





5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	CAL DUE	USED
Receiver RF Section	HP	85462A	3325A00106	03/03/2009	☐
RF Filter Section	HP	85460A	3330A00109	03/03/2009	☐
Spectrum Analyzer	R & S	FSP 40	100024	08/23/2008	☒
Spectrum Analyzer	Agilent	E7402A	MY44212200	29/10/2008	☐
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	07/30/2008	☒
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2630	09/07/2008	☐
Horn Antenna	EMCO	3115	9507-4513	02/13/2009	☒
Horn Antenna	EMCO	3115	6579	03/20/2009	☐
Waveguide Horn Antenna	EMCO	3116	9904-2423	07/20/2008	☐
LISN	Fischer Custom Communications	FCC-LISN-2	316	09/24/2008	☐
LISN	Fischer Custom Communications	FCC-LISN-50-25-2	2014	10/22/2008	☐
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	04/28/2009	☒
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	01/17/2009	☐
Pre-Amplifier	MITEQ	AMF-6F-26004000-40-8P	13224444	11/05/2008	☐
System	TILE! Instrument Control		Ver. 3.4.K.29	VBU	☒